

## Under-cabinet Lighting System

### CLAIMS

I claim:

1. A system comprising:

a source of high-frequency power having a high-frequency output;

an interconnecting cord comprising a pair of parallel output conductors encased in a common insulating sheath;

said interconnecting cord being connected to the high-frequency output;

a luminaire;

the luminaire having a pair of input terminals, a high-frequency ballasting circuit, and a lamp socket capable of receiving and supporting a lamp;

said pair of input terminals being capable of piercing said common insulating sheath of the pair of parallel output conductors during the installation process of the luminaire, each input terminal making electrical contact with a different conductor.

2. The system described in claim 1 wherein the luminaire can be installed at any location, along the length of the pair of parallel output conductors.

3. The system described in claim 1 wherein multiple luminaires can be installed at any location, along the length of the pair of parallel output conductors.

4. The system described in claim 1, wherein the maximum voltage between the pair of parallel output conductors and the maximum power available from the pair of parallel output conductors meets the limits for Class II or III wiring, as defined by the National Electrical Code.

5. The system described in claim 1, wherein the luminaire can be connected to the pair of parallel output conductors in any one of four possible orientations relative to the pair of parallel

1 output conductors.

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3 6. The system described in claim 1, wherein a power level selection capability is included;  
4 the power level of the luminaire being selected by inserting or moving the location of a  
5 plug assembly.

6  
7 7. A luminaire suitable for connection to and being powered from a high-frequency power  
8 source;

9 the luminaire having a pair of input terminals;

10 the input terminals being located within a channel;

11 the channel being of such a design as to receive an interconnecting cord comprising two  
12 parallel conductors encased within and separated from each other by a common  
13 insulating sheath.

14  
15 8. The luminaire described in claim 7, wherein the luminaire can be mounted in place prior being  
16 connected to the interconnecting cord.

17  
18 9. The luminaire described in claim 7, wherein the interconnecting cord is installed in place  
19 under the cabinet or shelf before the luminaire is mounted in place under the cabinet or  
20 shelf.

21 10. The luminaire described in claim 7, wherein the power factor of the power being drawn by  
22 the luminaire is greater than 80%.

23  
24 11. The luminaire described in claim 7, wherein the luminaire includes two lamp sockets;  
25 the lamp sockets each having a receptacle capable of receiving a single ended lamp;  
26 said receptacles facing opposing directions and also located on substantially the same  
27 axis.

28  
29 12. The luminaire described in claim 7, wherein the luminaire includes an enclosure;  
30 said enclosure being non-conductive.

Claims  
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1  
2 13. The luminaire described in claim 7, wherein the luminaire is provided with a socket capable  
3 of receiving and supporting a long single-ended lamp;  
4 said luminaire requiring a support bracket to properly support the long single-ended  
5 lamp;  
6 said support bracket being provided with a recess capable of allowing said  
7 interconnecting cord to pass through.  
8

9 14. A luminaire suitable for connection to and being powered from a high-frequency power  
10 source by way of an interconnecting cord;  
11 the interconnecting cord comprising a first electrical conductor and a second electrical conductor  
12 encased within and separated from one another by a common insulating sheath;  
13 the luminaire including two channels intersecting at right angles;  
14 either channel being capable of receiving said interconnecting cord;  
15 the luminaire also including a first input terminal and a second input terminal;  
16 the input terminals being designed to pierce the insulation of the interconnecting cord;  
17 the input terminals being located within the area of the intersection of the two channels and  
18 positioned, such that, the first input terminal making contact with a first electrical  
19 conductor and the second input terminal making contact with the second electrical  
20 conductor during the installation of the luminaire no matter through which channel the  
21 electrical cord is routed.  
22

23 15. The luminaire described in claim 14, wherein the luminaire can be mounted in place prior to  
24 the insertion of the interconnecting cord.  
25

26 16. The luminaire described in claim 14, wherein the interconnecting cord is installed in place  
27 under the cabinet or shelf before the luminaire is mounted in place under the cabinet or  
28 shelf.  
29

30 17. The luminaire described in claim 14, wherein multiple luminaires can be connected to the

1 same interconnecting cord.

2  
3 18. The luminaire described in claim 14, wherein the luminaire can be connected to the  
4 interconnecting cord in any one of four possible orientations.

5  
6 19. The luminaire described in claim 14, wherein the input terminals have a circular or oval  
7 cross-section

8  
9 20. A ballasted-socket assembly for installation under a cabinet or shelf;  
10 said ballasted-socket assembly including a pair of high-frequency input terminals, a high-  
11 frequency ballasting circuit, a lamp socket for a single-ended lamp and an enclosure;  
12 said enclosure completely enclosing the high-frequency ballasting circuitry, the interconnecting  
13 wiring between the high-frequency input terminals and the high-frequency ballasting  
14 circuit, and the interconnecting wiring between the high-frequency ballasting circuit and  
15 the lamp socket for a single-ended lamp.

16  
17 21. The ballasted-socket assembly described in claim 20 wherein, said enclosure also includes a  
18 mounting tab;  
19 said mounting tab having holes capable of receiving screws for mounting the ballasted-socket  
20 assembly directly to the underside of a cabinet or shelf.

21  
22 22. The ballasted-socket assembly described in claim 20, wherein an optional reflector is used  
23 with the ballasted-socket assembly;  
24 said reflector being installed between the ballasted-socket assembly and the underside of the  
25 cabinet or shelf.

26  
27 23. An arrangement comprising: a pair of input terminals, a ballasting circuit, a socket with  
28 output terminals that is capable of receiving, supporting and making electrical connection  
29 to a single-ended lamp, and an enclosure;  
30 the input to the ballasting circuit being connected to the pair of input terminals;

1 the output of the ballasting circuit being connected to the output terminals within the socket;  
2 the ballasting circuit being capable of properly igniting and powering a gas discharge lamp when  
3 provided with a high-frequency voltage on the pair of input terminals;  
4 the enclosure completely encapsulating the ballasting circuitry, the interconnection between the  
5 input terminals and the ballasting circuitry, the interconnection between the ballasting  
6 circuitry and the output terminals of the socket, and the portion of the output terminals to  
7 which the ballasting circuitry connects.

8  
9 24. The arrangement described in 23, wherein the pair of input terminals makes connection to a  
10 source of high-frequency voltage by way of an insulation-displacement connector.

11  
12 25. The arrangement described in 23 wherein the wire can be run through the insulation-  
13 displacement connector in any one of four possible orientations.

14  
15 26. A high-frequency under-cabinet lighting system comprising: a high-frequency power source,  
16 an interconnecting cable, and multiple luminaires;  
17 the interconnecting cable being supplied with no luminaires connected there to;  
18 the system further characterized in that multiple luminaires can be powered from the same  
19 interconnecting cable without cutting the interconnecting cable.

20  
21 27. A high-frequency ballasting circuit comprising: a pair of input terminals, a capacitor, a  
22 transformer, and an inductor;  
23 the transformer having a primary winding, multiple low voltage secondary windings and  
24 a high voltage secondary windings;  
25 the capacitor being connected in series between one of the input terminals and the  
26 primary winding of the transformer;  
27 the low voltage secondary windings being suitable for powering the cathodes of a gas-  
28 discharge lamp;  
29 the high voltage secondary winding being suitable for connection across a gas-discharge  
30 lamp;

the high voltage secondary providing sufficient voltage to ignite a gas-discharge lamp;  
the lamp current being limited by the capacitor in series with the input terminal and the  
primary winding;  
the circuit arrangement resulting in a reduction of voltage across the cathodes after the  
gas discharge lamp has ignited.